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ABSTRACT

This career awareness booklet provides information and activities to help youth prepare for career and explore jobs in the natural gas industry. Students are exposed to career planning ideas and activities; they learn about a wide variety of industry jobs, what workers say about their jobs, and how the industry operates. Five sections are included: (1) "This Booklet Will Help You Explore Careers in the Natural Gas Industry"; (2) "Introducing America's Natural Gas Industry"; (3) "Working in the Natural Gas Industry"; (4) "Meet Some Gas Industry People"; and (5) "Now Take Action! You Make Decisions on These Two Simulations". The two simulations are "Assign Production Workers to Their Tasks" and "Keep Transmission and Distribution Jobs Filled." An appendix, "Appropriate Responses for Simulations," is included. In section three, 19 jobs are profiled: accountant; clerk typist; computer programmer/analyst; credit investigator; customer service representative; construction equipment operator; consumer affairs representative; dispatcher; drafting technician; editorial representative (writer); engineer; governmental affairs manager; lawyer; leakage inspector; maintenance worker; marketing representative; meter reader; personnel manager; and rate engineer. (NLA)

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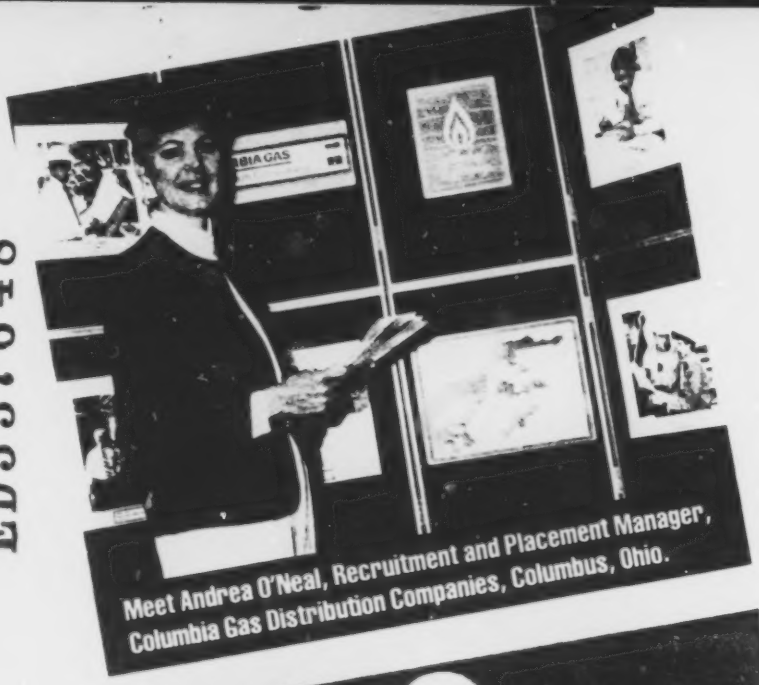
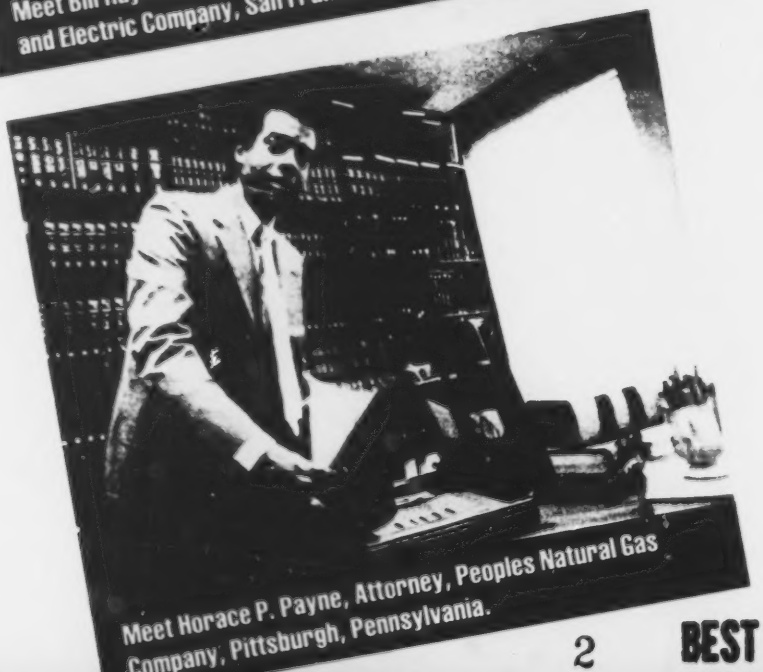


Meet Andrea O'Neal, Recruitment and Placement Manager, Columbia Gas Distribution Companies, Columbus, Ohio.

Meet Bill Raymundo, Supervising Gas Engineer, Pacific Gas and Electric Company, San Francisco, California.



Meet Horace P. Payne, Attorney, Peoples Natural Gas Company, Pittsburgh, Pennsylvania.

Explore Your Future

Careers in the Natural Gas Industry

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A Note to Educators and Group Leaders.

About the Booklet

This career awareness booklet provides information and activities to help youth prepare for careers and explore jobs in the natural gas industry. Students learn:

- career planning ideas and activities
- about a wide variety of industry jobs
- what real workers say about their jobs, and
- how the industry operates

About the Learning Activities

Two sections are designed as learning activities for individual students, small groups or entire classes:

"Working in the Natural Gas Industry"

"Now Take Action: You Make Decisions on These Two Simulations"

You may wish to reproduce and distribute these or any other sections.

Many students will enjoy the two simulations as individual or group learning games. Consider organizing students into small work groups, or even as competitive teams.

About Using this Booklet

No special preparation is required for you to use this material. You simply need to become familiar with the contents and be prepared to encourage and assist students with the learning activities.

Plan to conduct introductory and follow-up discussions about the material. Feel free to adapt any of the contents to your own curriculum and the particular needs of your students.

The entire contents were reviewed by the American Gas Association Education Advisory Council, a group of educators from across the country. They heartily encourage flexible and creative use of the booklet and any of its components.

Best wishes to you and your students.

Explore Your Future: Careers in the Natural Gas Industry.
Produced by the Educational Programs Committee of the American Gas Association.
Written by Norman M. Singer, Ed. D., Columbus, Ohio.
Reviewed and endorsed by the Education Advisory Council of the American Gas Association.

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IV. Meet Some Gas Industry People.

Meet **Andrea O'Neal,** Recruitment and Placement Manager.

Meet **Al Richardson,** Manager of Research.

Meet **Anthony Durrough,** Meter Reader.

Meet **Don McCauley,** Customer Accounts Manager.

Meet **Doris Pincombe,** Supervisor of Commercial Sales and Marketing.

Meet **John "Jack" Sholar,** Director of Natural Gas Vehicle Markets.

Meet **Horace P. Payne,** Attorney.

Meet **Chi-Wang-Law,** Computer Programmer.

Meet **Bill Raymundo,** Supervising Gas Engineer.

V. Now Take Action! You Make Decisions on These Two Simulations.

Simulation 1: **"Assign Production Workers to Their Tasks."**

Simulation 2: **"Keep Transmission and Distribution Jobs Filled."**

Appendix: Appropriate Simulation Responses.

This Booklet Will Help You Explore Careers in the Natural Gas Industry.

Now is a good time to look ahead to opportunities in the natural gas industry. Use this booklet and see how **your future** might fit into **our future.**

- ☐ **You'll meet some real people** who tell you about their work in the industry.
- ☐ You'll learn about the **types of gas companies** and the **major tasks** of industry workers.
- ☐ You'll get to know about some of the **career opportunities** in the natural gas industry and the training you'll need.
- ☐ You'll gain **good advice** for planning a career in the industry.

Introducing America's Natural Gas Industry.

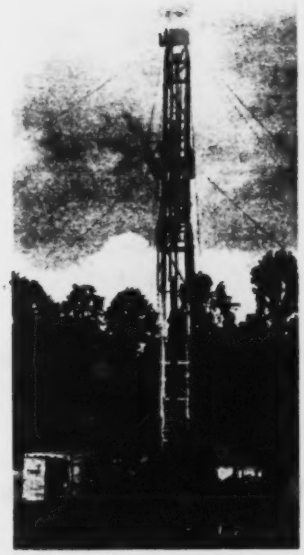
You'll Find Rewarding Opportunities.

Natural gas is America's clean, reliable, safe and efficient source of energy. The natural gas industry is strong and stable, yet many changes lie ahead in its exciting future.

Think about joining the thousands of women and men who work together to meet America's steady demand for natural gas. You can become part of this industry which takes a natural resource from inside our planet and makes it available everywhere.

You will find a wide variety of jobs available at companies in your community and across the country. Working in the natural gas industry, you will gain a world of new experiences, accomplishments and rewards.

What Do the People in the Natural Gas Industry Do?



1. They FIND natural gas.

Natural gas is found deep in the earth. To find natural gas deposits, scientists and engineers study geological maps, aerial photographs and infrared photographs taken from satellites. They also take measurements and rock samples to gather information in the search for drilling sites most likely to produce natural gas.

2. They EXTRACT it from the ground.

When a promising drilling site is found, the production company purchases or leases the land. Legal permission is needed before gas can be extracted.

Then seismographs and other scientific instruments are used to conduct more tests. But the only sure way to find natural gas is to drill one or several wells in an area. A gas well is a deep, narrow channel between the underground gas and the surface of the earth. Gas wells are drilled on land and under the ocean.

A drilling site crew erects a "rotary rig." This is like a portable factory with one purpose: to produce a hole miles deep. The rig supports a pipe and drill bit which turns rapidly as it bores through layers of rock down to the gas bed.

When natural gas is found, the production company sends a recovery crew to install permanent pipes and valves on top of the well. Workers call the set of pipes and valves a Christmas tree because it is shaped like one. With it they regulate the flow of gas from the well.

3. They CLEAN the gas to remove impurities.

Raw natural gas from a well is not always ready for transmission through the pipelines. Other hydrocarbons and impurities must be removed. Production workers "clean" the gas and separate useful by-products such as propane. Then the natural gas is ready to leave the processing station to travel through natural gas pipelines.

4. They STORE the gas until it is needed.

Because the demand for natural gas is higher during the winter season, the gas company stores extra gas during the summer. Gas can be stored in above-ground tanks, in old underground gas fields which have been emptied or in other underground rock formations.

5. They PIPE it to consumers throughout the country.

Transmission companies operate a huge network of underground pipelines stretching across North America. These pipelines link the gas wells to the local distribution companies and the consumers. How long are the pipelines? If all of the pipes were laid end to end, they could reach beyond the moon.

Transmission companies search for the best and safest route for a pipeline. Then they get an OK from the federal government. Transmission company employees also make all the arrangements needed to use a corridor of land, called a "right of way," the entire length of the pipeline.

The transmission company builds and operates the pipeline and the compressor stations located every 50-100 miles along the way. These stations keep the gas moving at about 15 miles per hour until it reaches a facility called the city gate.

The local distribution company takes over at the city gate where the gas pressure is reduced. Distribution workers feed the gas into pipes which carry it wherever it is needed. Local distribution companies are known as utility companies. They serve cities and large population areas.

Natural gas itself has no color or odor. So, for safety, the local distribution company mixes an odor into the gas. Then gas leaks can be detected and repaired.

Every place the gas is used, it first flows through a meter which measures it. A gas company worker records the meter readings regularly, and the company sends a bill for the gas.

6. They HELP consumers use natural gas efficiently.

The local gas company provides many services so that gas is used safely and efficiently. Company representatives show customers how to use natural gas wisely. They also prepare information about natural gas for use at home, in school and in industry.

What Kinds of Gas Companies Are There?

People in the gas industry may be employed by three types of gas companies:

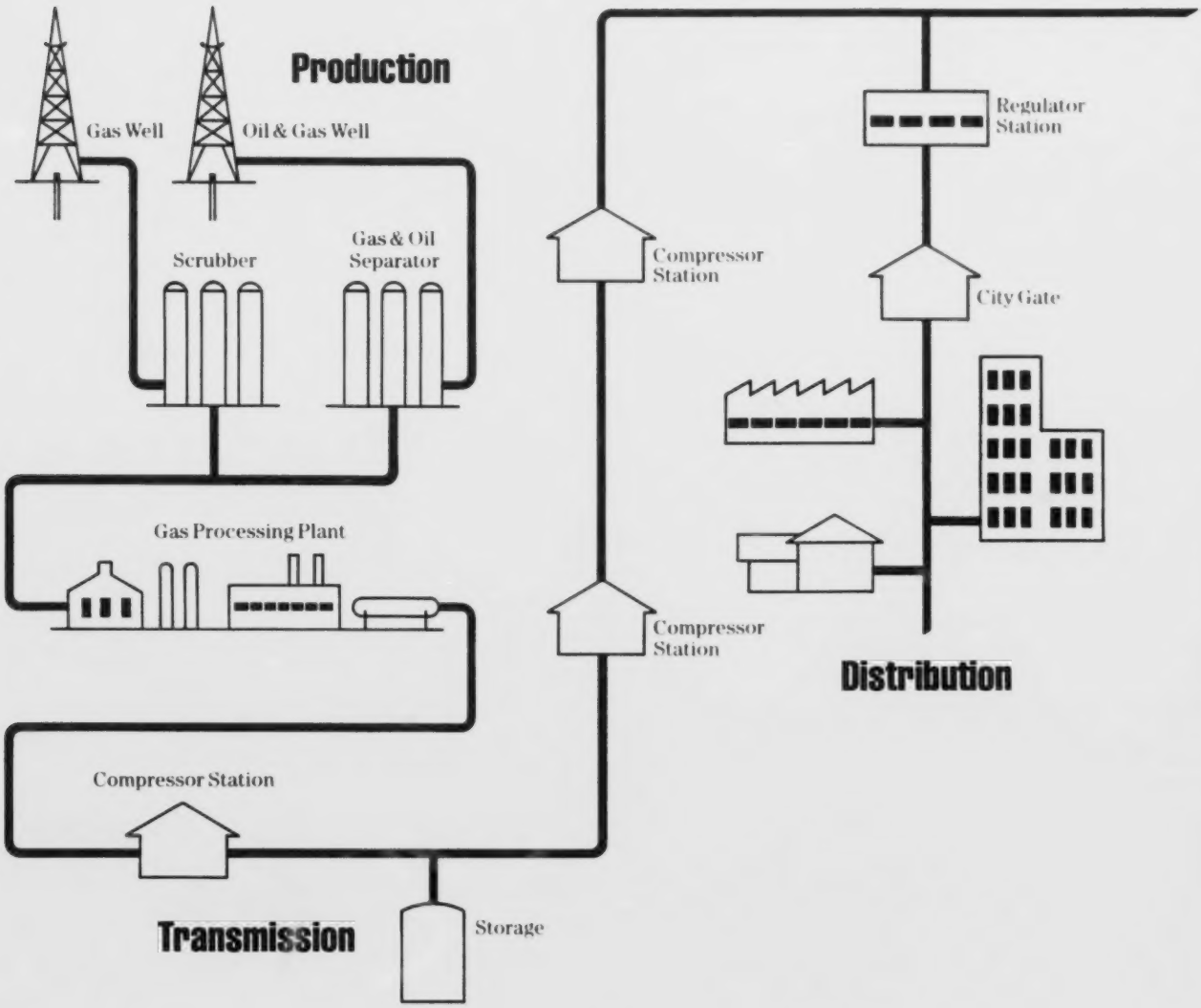
Production companies explore for natural gas, drill wells to tap it, extract it from the earth or under the sea, and process it.

Transmission companies operate pipelines linking gas fields to major cities.

Distribution companies are known as "local utilities." They purchase natural gas from the transmission companies and bring it to your family, and to schools, hospitals, businesses, industries and public places.

Most gas companies are involved in at least one of these phases of the industry. Some large gas companies may work in all three phases.

The diagram below shows how gas companies work together from **production** to **transmission** to **distribution:**



Natural Gas Works Hard.

Think of something you use every day. Chances are natural gas plays an important energy role in producing it. Nearly half of America's natural gas is distributed to industries to help make products such as:

Clothing fibers

Paints

Fertilizers

Processed food

Plastic items

Chemicals

Iron, steel and aluminum items

Glass

Ceramics

Paper

Often electricity is generated by using natural gas as the primary energy source.

In more than 50 million homes, schools, hospitals, apartment buildings, condominiums, shopping centers and stores, natural gas provides the energy for:

Heating and cooling

Cooking

Heating water

Drying clothes

Working in the Natural Gas Industry.

[*Educators may wish to reproduce this section and distribute copies to students. Students may find the following activities useful in planning their careers.*]

How Can You Prepare for a Job?

1. **Review the various jobs described in this booklet.** Which ones appeal to you? Are you willing and able to get the education and training the job requires?
2. **Seek out more information about interesting jobs.** Ask the guidance staff at your school to help you find reference books and other information sources. For example *The Dictionary of Occupational Titles* lists and describes hundreds of jobs in the gas industry.
3. **Arrange to meet with real people working in jobs that interest you.** Find out first-hand what the job is like now and how it might be changing. Through informal meetings with real workers, you'll learn about working conditions, opportunities for promotion, and about the atmosphere on the job. This is an excellent opportunity to take a look at the job you may have someday.
4. **Start planning to get enough of the right education and training.** In the gas industry many jobs require specialized college training. Most require a high school education. Nearly all of them call for good speaking and writing, and the ability to work with numbers.
5. **Become familiar with computers and what they can do.** Many jobs require use of computers. The gas industry has been one of the pioneers in the use of electronic data processing and computer programs.
6. **Maintain a personal notebook or journal for job planning.** List the in-school and out-of-school experiences you've had. You may be surprised to realize how many of your activities and experiences actually do help you prepare for a career:

   Have you done volunteer work to serve your community?

   _____

   What jobs or responsibilities have you had at home?

   _____

What other family activities proved educational for you?

_____

Have you ever had after-school or weekend jobs?

_____

Can you think of other experiences which have made you more capable?

_____

Now check your lists above. Did you remember to include:

Baby-sitting and child care?
Scouting and club work?
Newspaper routes?
Odd jobs?
School-related successes?
Athletics and team sports?
Travel?
Awards and recognitions?

By keeping a record of accomplishments, experiences and your thoughts about them, you'll be prepared to discuss them. Interviewers at the gas company will be interested in your entire background.

Some high schools have programs to help a student develop a job preparation portfolio or "career passport." If your school has such a program, get involved. Ask your teacher or guidance counselor.

What Will the Gas Company Want to Know About You?

When you apply for a job in the natural gas industry, interviewers will have many questions about you. Application forms will ask you to write down many types of information. Your personal job-planning notebook will come in handy. It will help you give a clear, convincing picture of yourself and your qualifications.

See yourself in the future. *Imagine that you are applying for a job. Respond to the following interview or application questions with answers you'd like to be able to give:*

Schooling

What schools and colleges have you attended?

_____

Do you have a high school diploma or college degree? _____

What vocational training have you completed?

_____

What was your grade-point average? _____

Describe your school attendance record.

_____

In what extra-curricular activities did you participate?

_____

Work Experiences

What kind of jobs have you held?

_____

How many different jobs have you held?

_____

What kinds of companies employed you?

_____

What specific job duties have you performed?

_____

What vocational or professional skills have you developed?

_____

Why did you leave your previous jobs?

_____

What would your past employers say about you?

_____

Describe your work attendance record.

_____

Other Experiences

In what ways have you developed responsibility and reliability?

_____

What are your hobbies and interests?

_____

How have you shown problem-solving abilities?

_____

How have you shown leadership abilities?

_____

How have you shown you can stick to a task and finish it?

_____

What successful team experiences have you had?

_____

Have you been convicted of a felony? _____

*Could you pass a drug-screening test? _____

**Many businesses require a physical examination prior to employment. Often this examination includes a drug screening.*

Appearances and Behavior

Describe your appearance and grooming.

_____

Describe your health and physical condition.

_____

What words describe your relationships with others?

_____

Do you speak clearly and directly? _____

Is your application form completed correctly? _____

Have you given accurate information and used correct spelling?

_____

Are you willing to ask questions about the company and the job openings?

_____

Do you seem enthusiastic about work? _____

What Kinds of Jobs Will Be Available?

The natural gas industry hires men and women with all kinds of backgrounds, skills and training. For many jobs a four-year college degree is a minimum requirement. Other jobs may require a two-year college degree or a high school diploma. Vocational training and work experience may be required for some jobs.

19 Job Profiles

A profile is a brief description of a real job.

The following profiles are just a sample of jobs in the natural gas industry. Read about the duties performed in the different jobs, the skills required and the education or experience preferred.

Get further acquainted with these and other jobs in the next section of this booklet, "MEET SOME GAS INDUSTRY PEOPLE," and make decisions on the simulations in the last section.

Accountant

Duties:

- ☐ prepares accounting entries needed for financial reports
- ☐ analyzes accounting data and questions unusual items
- ☐ updates financial reports and budget comparisons
- ☐ inspects items to determine if proper accounting procedures were used in business transactions
- ☐ recommends improvements in procedures

Skills Needed:

- ☐ ability to communicate well
- ☐ ability to work well with others in compiling data
- ☐ ability to operate computers and other business machines
- ☐ ability to work with a minimum of supervision
- ☐ ability to meet deadlines

Education/Experience preferred:

College degree in accounting, finance or a related field

Clerk Typist

Duties:

- ☐ types letters, forms, reports and other documents from rough drafts, notes or other forms
- ☐ computes percentages, averages and other mathematical calculations for reports
- ☐ files reports, records, correspondence and other material
- ☐ searches files for specific information
- ☐ receives and distributes mail and prepares material for mailing
- ☐ answers telephone calls, takes messages and receives office visitors

Skills Needed:

- ☐ ability to type
- ☐ ability to file and classify information
- ☐ ability to proofread for accuracy
- ☐ ability to correct minor spelling, grammar and punctuation errors
- ☐ ability to communicate well
- ☐ ability to use the telephone effectively
- ☐ ability to use various office machines

Education/Experience Preferred:

High school diploma; vocational office and business training and/or experience

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Computer Programmer/Analyst

Duties:

- ☐ researches and develops information necessary to create new computer programs
- ☐ writes new programs in computer language
- ☐ tests programs and resolves problems
- ☐ trains other employees to use computer programs

Skills Needed:

- ☐ ability to communicate well
- ☐ ability to work well with others
- ☐ ability to think through a problem logically
- ☐ ability to research problems and find solutions
- ☐ ability to meet deadlines

Education/Experience Preferred:

College degree in computer science, systems analysis or related field

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Credit Investigator

Duties:

- ☐ locates and contacts customers who have not paid bills
- ☐ discusses with customers their rights if the bill is in dispute
- ☐ collects overdue bills and arranges payment plans
- ☐ arranges for service to be discontinued when necessary

Skills Needed:

- ☐ ability to communicate well by phone and in person
- ☐ ability to get along well with others
- ☐ ability to read natural gas meters

☐ ability to drive company automobile and read maps

Education/Experience preferred:

High school education or equivalent work experience. Driver's license required.

Customer Service Representative

Duties:

☐ answers customer requests concerning credit, collection and service procedures, billing, meter reading and rates

☐ resolves customer complaints

☐ types and files (either electronically or manually) changes in customer records

☐ explains company policies and procedures to new customers

☐ prepares applications for service to new customers and writes service requests of all kinds

☐ explains proper use of natural gas appliances

☐ processes customer payments

Skills Needed:

☐ good oral and written communication

☐ ability to use telephone accurately

☐ ability to operate business machines

☐ ability to get along well with others

Education/Experience Preferred:

High school diploma and experience in working with the public

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Construction Equipment Operator

Duties:

☐ excavates earth and lays pipe using light earth moving and maintenance equipment including: backhoe, trencher, front-end loader, hydralift, bulldozer, side boom, tamper and boring machine

☐ cleans, greases and lubricates equipment

☐ drives trucks to transport equipment and material

Skills Needed:

☐ ability to work in all weather conditions

☐ ability to drive company vehicles and read maps

☐ ability to follow directions

☐ good physical condition with no physical restrictions

Education/Experience Preferred:

No specific educational requirements; driver's license required; some experience or training on equipment desirable

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Consumer Affairs Representative

Duties:

- ☐ develops and coordinates programs and information directed to specific groups such as students, elderly people and low-income customers
- ☐ analyzes and interprets surveys and other information to determine public trends, issues and attitudes
- ☐ identifies community groups to work on specific programs with the company
- ☐ improves relationships between the community and the company

Skills Needed:

- ☐ good oral and written communication
- ☐ ability to work well with others
- ☐ ability to conduct research
- ☐ creative thinking

Education/Experience Preferred:

College degree in communications, journalism or related field

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Dispatcher

Duties:

- ☐ relays instructions and work orders to field employees via radio and telephone
- ☐ assigns priority to work orders and reviews completed orders for accuracy
- ☐ sends employees to respond to emergency and fire calls
- ☐ coordinates activities between departments during emergencies
- ☐ advises customers, plumbers, contractors and others involved in excavation; explains company policies and work schedules

Skills Needed:

- ☐ ability to work under pressure
- ☐ ability to type and file
- ☐ ability to use telephones and two-way radios properly
- ☐ good oral and written communication skills
- ☐ ability to work well with others

Education/Experience Preferred:

Experience as an entry-level dispatcher or equivalent experience may be required

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Drafting Technician

Duties:

- ☐ draws accurately scaled maps, charts and diagrams using standard drafting techniques, instruments and materials
- ☐ revises company maps and drawings
- ☐ constructs charts, graphs, signs, posters and company forms
- ☐ records the locations of company pipelines and equipment

Skills Needed:

- ☐ drafting skills: drawing, measuring to scale, lettering
- ☐ ability to use drafting tools

Education/Experience Preferred:

High school education or equivalent work experience plus mechanical drawing and lettering

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Editorial Representative (Writer)

Duties:

- ☐ researches, writes and edits articles for company publications
- ☐ assists in planning and producing publications: determines format and layout of articles, takes and sizes photos, and selects size and style of printing typefaces
- ☐ coordinates technical production of publications with printers
- ☐ evaluates the importance of information for inclusion in publications
- ☐ verifies sources of information for accuracy

Skills Needed:

- ☐ excellent oral and written communication
- ☐ ability to conduct interviews
- ☐ other language skills: proofreading, spelling, grammar, punctuation
- ☐ ability to work well with others
- ☐ ability to create graphic designs
- ☐ creative thinking

Education/Experience Preferred:

College degree in communications, journalism or related field

Engineer

Duties:

- ☐ plans and designs new construction projects involving pipelines and related facilities
- ☐ prepares specifications so procedures comply with state and federal codes and standards
- ☐ works with contractors and others doing work involving company facilities
- ☐ visits field locations to make sure work procedures comply with government codes and company policies
- ☐ plans and oversees training programs for employees and construction inspectors

Skills Needed:

- ☐ ability to think through a problem logically
- ☐ ability to analyze and evaluate data
- ☐ ability to conduct research
- ☐ good oral and written communication

Education/Experience Preferred:

Four-year college degree in mechanical, civil or industrial engineering

Governmental Affairs Manager

Duties:

- ☐ reviews the activities of state legislatures and studies proposed legislation to determine its significance to the gas industry
- ☐ presents the company's position on various issues and concerns to legislative committees and legislators
- ☐ maintains contact with legislators, other public officials and utility representatives to discuss legislation regarding the industry
- ☐ encourages employees to become involved in civic and governmental affairs

Skills Needed:

- ☐ good oral and written communication
- ☐ ability to persuade others
- ☐ ability to analyze and evaluate information
- ☐ ability to conduct research

Education/Experience Preferred:

College degree in political science, history, communications, engineering; training or degree in law helpful

Lawyer

Duties:

- ☐ gathers facts and arguments in legal cases
- ☐ identifies legal questions and problems and advises managers on a course of action
- ☐ furnishes managers with information and advises them about the company's legal rights and responsibilities
- ☐ represents the company in court and before government and regulatory agencies

Skills Needed:

- ☐ ability to conduct research and analyze results
- ☐ highly developed written and oral communication

Education/Experience Preferred:

Four-year undergraduate degree; law degree; membership in the Bar Association may be required

Leakage Inspector

Duties:

- ☐ investigates natural gas pipelines for leaks using a gas detector or similar equipment
- ☐ regularly inspects the insides and outsides of public buildings, schools and businesses for natural gas leaks
- ☐ tests basements, manholes, catch basins and other street openings for combustible mixtures
- ☐ instructs maintenance employees in the proper use of equipment, in how to determine the source of leaks, and how to repair leaks

Skills Needed:

- ☐ good physical condition with no physical restrictions
- ☐ ability to use equipment properly
- ☐ good oral and written communication skills
- ☐ ability to work well with others

Education/Experience Preferred:

High school diploma or equivalent

Maintenance Worker

Duties:

- ☐ installs and maintains electrical and mechanical equipment such as generators, hot and cold water systems and air compressors

- ☐ operates and maintains the fire control system
- ☐ replaces electrical wiring and fixtures in accordance with state and city codes
- ☐ performs carpentry work
- ☐ maintains, repairs and replaces plumbing fixtures
- ☐ regularly tests safety devices and controls, including emergency back-up generators and smoke detectors
- ☐ maintains the air conditioning system
- ☐ cleans and paints equipment, walls and floors

Skills Needed:

- ☐ good physical condition with no physical restrictions
- ☐ mechanical know-how
- ☐ ability to operate equipment properly
- ☐ ability to get along well with others

Education/Experience Preferred:

High school diploma or equivalent

Marketing Representative

Duties:

- ☐ promotes the use of natural gas service and appliances to prospective customers
- ☐ provides cost comparisons, operating performance comparisons and literature to prospective customers
- ☐ assists customers with applications for gas service and financing plans for appliances
- ☐ contacts gas appliance dealers, builders and developers to promote the sale and use of natural gas equipment
- ☐ assists dealers and builders with advertising and model home openings
- ☐ participates in exhibits, displays and shows promoting natural gas

Skills Needed:

- ☐ oral and written communication skills; public speaking ability
- ☐ ability to work well with others
- ☐ ability to persuade others
- ☐ ability to conduct research

Education/Experience Preferred:

College degree in business, marketing, engineering or related field

Meter Reader

Duties:

- ☐ reads dials of gas meters and records findings
- ☐ checks company property on customers' premises
- ☐ answers customers' questions and refers them to others for more information
- ☐ performs routine clerical duties
- ☐ makes special meter reading arrangements with customers
- ☐ may perform service or maintenance work in some areas

Skills Needed:

- ☐ good eyesight and physical condition
- ☐ ability to keep good records
- ☐ ability to communicate and help others in a friendly manner
- ☐ ability to operate a motor vehicle (licensed driver) and read area maps

Education/Experience Preferred:

High school diploma or equivalent

Personnel Manager

Duties:

- ☐ works with supervisors, employees and retirees on matters of salary, benefits
- ☐ develops affirmative action plans and carries them out
- ☐ prepares and distributes announcements about job openings
- ☐ recruits, interviews, screens and processes job applicants
- ☐ helps employees and the company follow the rules of union contracts and procedures for health and safety

Skills Needed:

- ☐ ability to work well with others
- ☐ ability to analyze various rules and regulations
- ☐ ability to operate an automobile safely (licensed driver)
- ☐ good oral and written communication
- ☐ ability to calculate figures
- ☐ problem solving ability

Education/Experience Preferred:

Successful work experience or college training in personnel work

Rate Engineer

Duties:

- ☐ assists and advises in all matters of gas rates
- ☐ studies and evaluates state regulations and laws
- ☐ researches and reports matters affecting gas costs
- ☐ researches and designs gas rates
- ☐ represents the company at conferences and hearings

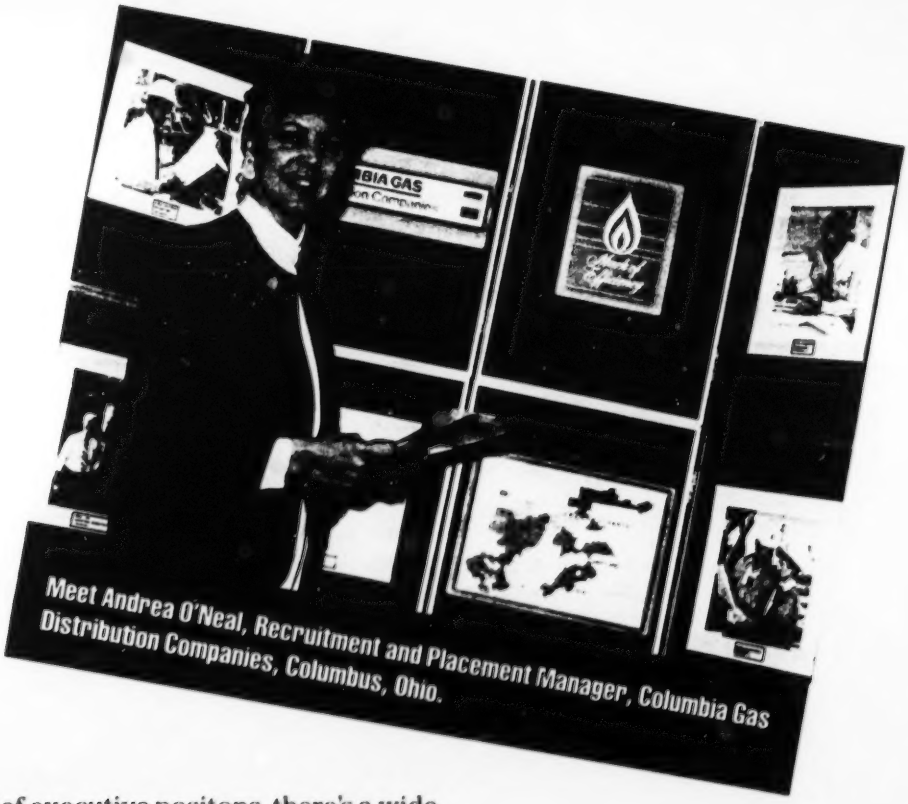
Skills Needed:

- ☐ ability to read and analyze complex regulations and laws
- ☐ ability to conduct research and present findings
- ☐ highly developed written and oral communication
- ☐ good ability to calculate figures and rates
- ☐ ability to work well with others

Education/Experience Preferred:

College degree in accounting, finance or a related field

Meet Some Gas Industry People.



Meet Andrea O'Neal, Recruitment and Placement Manager, Columbia Gas Distribution Companies, Columbus, Ohio.

Andrea O'Neal

"From first jobs to chief executive positons, there's a wide variety of work to do in our industry. From physically challenging outdoor work with unusual hours to jobs with regular hours in sheltered locations, we've got it. Compared to other industries, you can earn as much or more in natural gas, too. Regardless of your job in natural gas, our No. 1 emphasis is service to the customer.

We provide an excellent benefit package. That means you'll get paid vacations and holidays, health and life insurance, a retirement plan, and a program to help you own stock in the company. If you choose to return to school, we help pay your school tuition and offer a variety of on-the-job training opportunities.

Are you willing to work hard, improve your skills and learn on-the-job? Can you be a leader? If you develop new skills and prove to be steady, reliable and loyal, you can earn promotions with us. We need likeable people who are good at cooperation and communication. We look for people who are punctual, stick to their work, can handle problems and have done well in school. My priority is finding and placing top-notch workers.

Do you want to work in a new city? Would you like to work in your hometown or possibly settle down at a job in one particular community? With companies in six states, we offer a great choice of work locations and jobs.

Why not plan your future in our future?"

"We're a solid industry with a variety of jobs."

Al Richardson

"Researchers, scientists and engineers know that natural gas is a premium, clean-burning fuel which does not harm the environment. We predict that natural gas will be a major energy source in the 21st century, and perhaps beyond. Job opportunities for you should grow as the demand for natural gas continues and new gas sources are developed.

"Our research shows that natural gas is the energy source of the future."

One possible new source is *geopressured gas*. The industry is working on the technology to tap huge deposits which lie in a deep, hot soupy mixture around and under the Gulf of Mexico.

Another is *manufactured gas*. Ongoing studies are showing how to make gas more efficiently from coal, oil, plant material and waste products.

Organizations are researching how to get at *deep gas* deposits with new drilling technology.

Our research is emphasizing the use of computers, ' high tech ' sensors and new materials for pipeline operations. We're applying advanced techniques to improve the efficiency of existing equipment, too.

We've learned that natural gas molecules are found throughout our galaxy and perhaps the entire universe. Someday we may use natural gas when we build space colonies. If you work hard and succeed in your school subjects, you may help lead our industry into the next century."

Meet Al Richardson, Manager of Research, Tennessee Gas Pipeline Company, Houston, Texas.

Meet Anthony Durrough, Meter Reader, Washington Natural Gas, Seattle, Washington.

Anthony Durrough

"Interaction with the public makes my job great. A meter reader really can get to know his customers. Many of us help out unofficially as we make our rounds in the community. We check on elderly citizens, keep an eye out for criminal activities, and watch for missing or abused children.

When I first report to work, I have a few special office jobs. I load up the computers so others can prepare meter reading routes. Then I get the office ready for my supervisor.

Most of our 20 meter readers leave the office by 8 AM and begin reading by 9. I visit each home on my route. Sometimes the meter is outdoors. I am responsible for the safe-keeping of keys for houses with indoor meters. I carry a hand-held computer to record my meter readings. Accuracy is a must!

My job requires me to be in top physical condition with good eyesight and a sense of geography. Walking gives me plenty of exercise. I drive a company car to my meter reading areas, so my driving skills are important. I feel like I'm my own boss because I'm trusted to work alone and allowed to be flexible with my schedule.

My greatest challenges are maintaining safety and not rushing my work. Of course we're cautious about the dogs we meet along our routes. Some aren't exactly friendly.

My schooling has been very important to me. I studied computer-aided design. But I'm really glad a friend tipped me off about this job. With my background in art, I'd like to move up into management and apply my creativity with advertising and publications work."

"I'm the gas worker customers see regularly. I gather the data that brings in the revenue."

Don McCauley

"In Customer Accounts we're responsible for collecting gas payments. We're the department that deals with customers, and we always work to maintain a solid relationship with them. Our biggest challenge is working with customers who have trouble paying their gas bills. We do everything we can to help them. We're a person-to-public operation, and we're supportive.

I have two assistants who oversee office operations and deal with customers' shutoffs and turn-ons. My office also includes four supervisors. Two work with the meter readers, and the other two work with the public and oversee employees. Although I have assistants, I like to deal directly with customers, too. I like to demonstrate good techniques for my office staff.

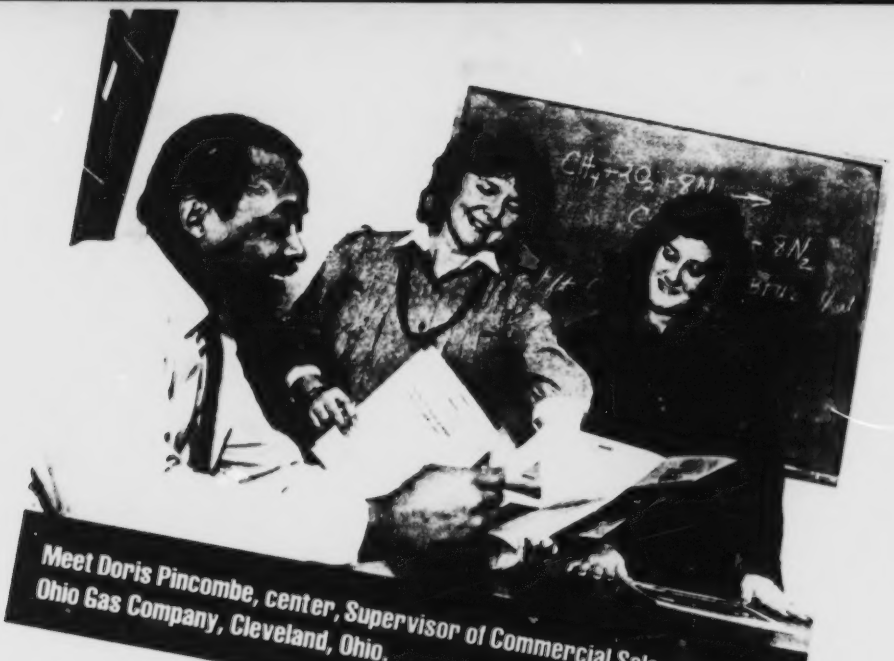
"We're running a business with a heart."

After working in a steel mill, I started here at NIPSCO as a meter reader. That was 28 years ago! Along the way I've found that getting a better job is a matter of *show-and-tell.* You've got to *show* how capable you are and *tell* the company you'd like to advance. Doing well in school is the best preparation you can get. I've also had some university training. That helped a lot.

The top requirement of my job is that I use good human relations skills with the public and my staff. I also must be able to speak, read, write and calculate well. I've had to " learn how to learn " by taking advantage of weekend and night classes and on-the-job training.

I'm happy when I'm dealing with customers. But someday I may want to try a corporate level position and manage more than one office. Natural gas is my career."

Meet Don McCauley, Customer Accounts Manager, Northern Indiana Public Service Company (NIPSCO), Hammond, Indiana.



Meet Doris Pincombe, center, Supervisor of Commercial Sales, The East Ohio Gas Company, Cleveland, Ohio.

Doris Pincombe

"In high school I took my work very seriously. I took college prep courses and grew very interested in metallurgical engineering. After graduation I began working days as a metallurgical technician. I went to college at night, so it took me eight years to earn my undergraduate engineering degree. I hooked up with the natural gas industry when East Ohio Gas came to interview at Wayne State University in Detroit, Michigan.

With my metallurgical engineering degree and some real-world work experience, I started at East Ohio Gas as an industrial sales representative. I grew a lot in that job over several years, and the company recognized my skills and promoted me. I also earned a master's degree in business administration during this time.

In my current job I'm responsible for supervising, developing sales opportunities and reporting activities of a whole department. Since I'm a 'people person', I love to lead the staff in new directions. I work with my people one-on-one and through team effort activities. I encourage their creativity and initiative to reach for better results.

"My career is built on my technical background and my concern for people."

The department I run sells natural gas to commercial customers such as office buildings, stores, schools, hospitals and manufacturers. We explain energy conservation, help them make equipment comparisons, maintain good relationships, and help them in many other ways.

My job calls for leadership, initiative, planning and organizational skills, foresight, and a flexible personality. I think I'm successful because I care about people. I love to see my people grow in their jobs and do excellent work. As their supervisor, I want to help them expand their potential and support their contributions.

I desire advancing into a corporate planning position. Then I'll be able to influence the direction of East Ohio Gas and create better ways to meet our challenges in the changing energy market. Our greatest challenge is to compete with other fuel technologies."

Meet John "Jack" Sholar, Director of Natural Gas Vehicle Markets, Atlanta Gas Light Company, Atlanta, Georgia.

John "Jack" Sholar

"I work in a special area of the natural gas industry. We're promoting the use of cars and light trucks which run on compressed natural gas (CNG) instead of ordinary gasoline from a filling station. Natural gas is an abundant, clean, economical fuel with a higher octane rating than gasoline. To run on compressed natural gas, vehicles must be fitted with a special carburetor and compressed natural gas tanks.

"Can you run a car on natural gas?"

Some gas companies already run some of their cars and trucks on CNG. The Atlanta Gas Light Company runs 335 out of 1300 vehicles on natural gas. Our CNG vehicles are a bit like homing pigeons. They must return to home base regularly for special refueling with compressed natural gas.

Today natural gas is a most important energy source in homes, businesses and industries. As our technology develops, someday CNG may become the preferred energy source for cars and trucks.

If you would like to help develop other new ways to use natural gas, the training you get in school can be the key. Study science and math, and learn to read and communicate well. Then you'll be on your way."

Horace P. Payne

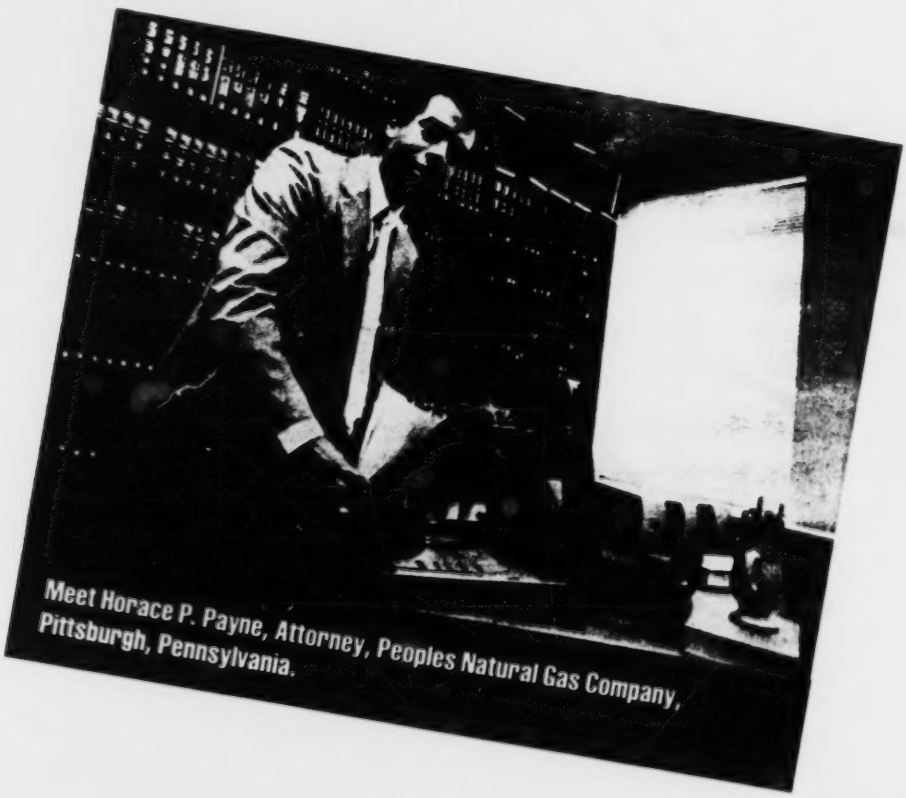
"I enjoy working for a corporation and especially a utility. Utility companies mean stability. After all, people will always need natural gas service.

I find my job as an attorney for the Peoples Natural Gas Company highly challenging. There is so much diversity. I never know what each day will bring and no two customers have the same problem. One day I may be preparing agreements for leasing land to drill upon and the next I will be representing the company in court. I prepare contracts and customer agreements; review company policy and procedures for compliance within the law; represent the company in court; and work out settlement agreements with customers.

Working as an attorney for a utility permits me to be a 'free thinker'—to develop better approaches to solving a legal problem. Time does not permit this type of freedom when you work in a law firm.

I suggest that if you are considering a career as an attorney you should first make sure you have a broad background in a variety of subject areas. Take a lot of speech and English courses, more than just the required amount. You can't be afraid to talk to people in this job. And you must learn how to argue each side of a given problem. Also, take the time to read as much as possible. This helps to broaden your horizons and familiarize yourself with a variety of items."

"Working as an attorney permits me to be a free thinker."



Meet Horace P. Payne, Attorney, Peoples Natural Gas Company, Pittsburgh, Pennsylvania.

Chi-Wang-Law

"I'm a real downtown Brooklynite. I went from Brooklyn Technical High School to Brooklyn Polytechnic Institute, to my first job at Brooklyn Union Gas Company.

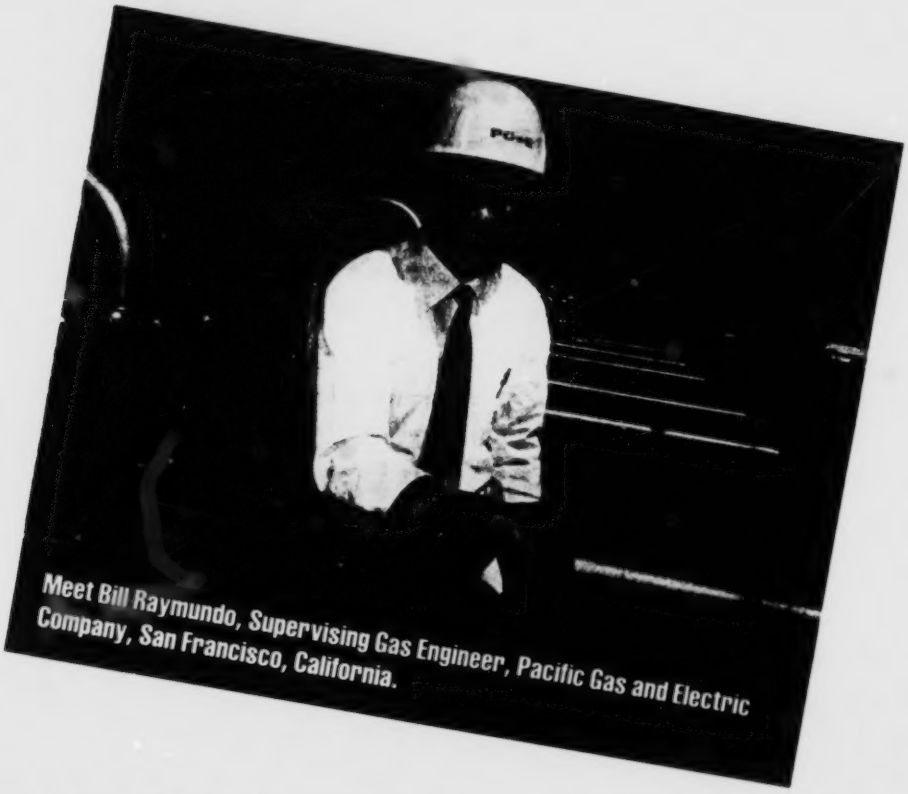
I've always been drawn towards technology and problem solving. I believe in using common sense, logical reasoning and weighing pros and cons in any situation. That's why I chose computer science as my field of endeavor.

"I have a unique opportunity to apply my technical skills towards helping people."

As a computer programmer, I have a unique opportunity to apply my technical skills towards helping people, specifically fellow employees. I work at the Systems Services Department with the Employees Information Systems group. Some of the things I've been responsible for are: implementing union increases, updating compensation for non-bargaining employees, modifying storage tapes for employee savings plan and adding a new bank to our existing direct deposit plan. Basically, my group is involved in maintaining the existing computer system. Although I don't have much of a chance to be in contact with individual employees outside of my department, these projects have enabled me to contribute towards my fellow employees.

With the experience gained from these projects, I know I can make a difference in the future development of a new computer system to better serve the company."

Meet Chi-Wang-Law, Computer Programmer, Brooklyn Union Gas Company, Brooklyn, New York.



Meet Bill Raymundo, Supervising Gas Engineer, Pacific Gas and Electric Company, San Francisco, California.

Bill Raymundo

"I really enjoy working in the gas industry. My career at the Pacific Gas and Electric Company has been full of interesting work and challenges. The gas industry has a lot of potential for advancement and uses of new technology.

After studying mechanical engineering in college, I joined the military. My first job at PG&E was as a draftsman where I worked on maps of the company's pipeline facilities. I was able to finish my college studies while working for PG&E. Adding a college degree to my job experience at the company allowed me to hold several different positions with the company.

Presently, I supervise four sections in the Gas System Design Department. Those sections are the Underground Storage Group, Gas Processing Group, Design Drafting Group and the Environmental Group. These groups are responsible for: designing underground gas facilities, gas wells, buildings and structures that have to do with moving gas in or out of underground storage, clean-up of the gas before it enters our pipeline system, quality pressure and flow rate of the gas. I am also responsible for the environmental engineering and design of all gas facilities, which entails working with the state Department of Health Services, meeting requirements of the Environmental Protection Act, and any county environmental requirements that may be more strict than the state's.

I really enjoy the diversity of my job and the opportunities it provides to work with many groups outside of the company. I particularly enjoy supervising people and would like to be a manager. My goal is to become a division manager. As a division manager I would work directly with a variety of people within the company as well as the customers."

"The gas industry has a lot of potential for advancement and uses of new technology."

Now Take Action! You Make Decisions on These Two Simulations.

Simulation 1

Assign Production Workers to Their Tasks!

Decide which workers perform various production tasks. In which step of production should each employee work?

Directions

Some natural gas production job titles are described briefly below. Following the job titles is a list of production tasks. More job titles than tasks are described.

Review the preceding explanation of gas production and the list of production job titles below.

In the first blank space, write the job title which fits the production task described. In the second blank tell which of the four production steps includes the job. Is it an **exploration, drilling, recovery,** or **processing** job?

Some Production Job Titles

Recorders collect and analyze information from different pieces of equipment.

Tool pushers oversee activity on rigs and control the supply of equipment used.

Rig workers construct the apparatus for reaching gas.

Chemists conduct scientific analysis and provide information.

Roustabouts take care of the general maintenance of a drilling rig.

Shooters manipulate explosives.

Production engineers direct drilling operations and select equipment to be used.

Pumpers operate machines which draw up the gas.

Surveyors and **drafters** study terrain and prepare charts and guide maps.

Lawyers provide legal guidance to land lease agents.

Land lease agents work on finding good sites and acquiring drilling rights.

Treaters operate equipment to purify raw gas.

Geologists and **geophysicists** gather, analyze and interpret data about rock formations under the earth's surface.

Gaugers maintain well production records.

Pumping station operators get processed gas up to speed and into the pipeline.

Drillers choose drilling bits and operate drilling equipment.

The Production Task	Who does it?	In what step?
1. The derrick must be built to support the pipe and drill bit.	_____	_____
2. Specimens of rock, soil and gas must be analyzed.	_____	_____
3. Advice must be given in land negotiations and corporate transactions.	_____	_____
4. Drilling rights must be purchased or leased.	_____	_____
5. Impurities and water vapor must be removed.	_____	_____
6. Scientific studies must identify gas deposits.	_____	_____
7. Explosive charges must be set and detonated.	_____	_____
8. Records must be kept to keep track of gas produced in the wells.	_____	_____
9. Compressors must be operated to boost the gas pressure for pipeline travel.	_____	_____
10. Rigs must be supervised and equipment supplied to other workers.	_____	_____
11. Maps of possible drilling sites must be prepared.	_____	_____
12. Machinery for bringing gas to the surface must be operated.	_____	_____

Simulation 2

Keep Transmission and Distribution Jobs Filled!

You are the placement manager of a transmission and distribution company. Recent promotions and transfers have left some positions open. You need to match job applicants to the jobs they should do.

Directions:

Study the following descriptions of qualified job applicants. Then read the ten descriptions of jobs to be filled. Assign each applicant to an appropriate job by writing his or her name in the blank spaces. Each applicant will fill only one job.

Qualified Job Applicants

☐ **Delia Nunez** worked successfully as a mail carrier for awhile. She's in good health, has excellent eyesight, and likes to move around in outdoor work. And she's not fearful of dogs!

☐ **Phil Gordon** has a science and engineering background. In college he won several competitions for developing new products. He has the skills and interest to experiment with new ideas.

☐ **Donald McNulty** has a college degree in civil engineering. He's had some good experience supervising new construction and doesn't mind working in a remote location.

☐ **Eldon Frank** has worked for ten years as a steam and pipe fitter. His former employers consider him an expert. On other jobs he helped train many new workers.

☐ **Vicky Brennan** has been trained in heavy equipment operation. She enjoys outdoor work and has good recommendations from prior employers.

☐ **Mara Murdoch** is working on a master's degree in mechanical engineering. She has a particular interest in working in an energy industry.

☐ **Lionel Washington** loves to work with computers and has become an expert in electronic data processing. He's well trained in business and office management skills.

☐ **Dallas Seeler** is a blacksmith. But he doesn't work on horses. He's trained and experienced in working with metals and is an excellent craftsperson.

☐ **Mary Thompson** has five years of experience repairing and installing gas appliances for a private company. She's applied for a job with the gas company because of the excellent benefits and training she'll gain.

☐ **Josh Potter** has twenty years of experience as the owner of a small construction company. He's a skilled builder.

☐ **Carl Whitman** has a degree in electrical engineering from a major university. After several years of laboratory work, he wants to work with other engineers on a practical project.

☐ **Arthur Martinez** speaks Spanish fluently. He's an experienced gas installation and maintenance worker. He'll be able to communicate effectively with Spanish-speaking customers.

☐ **Jeanette D'Angelo** studied home economics in college. She also has work experience in public relations and works well with people, even under stress. She is an accomplished writer and public speaker and understands the gas industry.

☐ **Barry Levin** is an excellent problem solver, especially when it comes to dealing with people. He likes a dynamic job in which he meets many different people. He's a good teacher.

Transmission and Distribution Jobs to Be Filled

1. Out on the transmission pipeline a new extension is being added. Three technical positions are open. These career professionals are needed to plan and work on the overall design, construction and maintenance of the pipeline. They will use scientific data to solve problems creatively.

   Hire: _____ _____

   _____

2. An expert is needed to join pipe sections together on the new pipeline and to work on the upkeep of the existing pipeline.

   Hire: _____

3. At the construction site several men and women are needed to help build stations and storage facilities and to do excavation work.

   Hire: _____ _____

4. A specialist is needed to design and make new types of pipes or parts for special purposes. This worker will know about metals, the melting temperatures, and how to craft them.

   Hire: _____

5. The company needs a person to handle paperwork and records and help office operations run smoothly. This person must have many office and business skills and be able to use computers and word processors.

   Hire: _____

6. Because of customer demand, two positions have been added. The person who fills this job will work with a team repairing gas lines and installing hookups which deliver gas to customers.

   Hire: _____ _____

7. Customers often call on the gas company to answer their questions and resolve problems. An outgoing person with good communication skills is needed.

   Hire: _____

8. A job is open for a person who will travel from customer to customer to record the amount of gas used.

   Hire: _____

9. The company president wants to put more emphasis on developing new products and more efficient appliances. He wants to hire an expert to work on these problems.

   Hire: _____

10. The gas company is responsible for keeping the public, stockholders and others informed about company activities and accomplishments. One of the professionals who has been doing this work is retiring.

    Hire: _____

Appendix: Appropriate Simulation Responses.

Simulation 1

"Assign Production Workers to Their Tasks!"

The Production Task	Who Does It?	In What Step?
1. The derrick must be built to support the pipe and drill bit.	*rig worker*	*drilling*
2. Specimens of rock, soil and gas must be analyzed.	*chemist*	*exploration*
3. Advice must be given in land negotiations and corporate transactions.	*lawyer*	*exploration*
4. Drilling rights must be purchased or leased.	*land lease agent*	*exploration*
5. Impurities and water vapor must be removed.	*treater*	*processing*
6. Scientific studies must identify gas deposits.	*geologists/ geophysicists*	*exploration*
7. Explosive charges must be set and detonated.	*shooter*	*exploration*
8. Records must be kept to keep track of gas produced in the wells.	*gaugers*	*recovery*
9. Compressors must be operated to boost the gas pressure for pipeline travel.	*pumping station operators*	*processing*
10. Rigs must be supervised and equipment supplied to other workers.	*tool pushers*	*drilling*
11. Maps of possible drilling sites must be prepared.	*surveyors/ drafters*	*exploration*
12. Machinery for bringing gas to the surface must be operated.	*pumpers*	*recovery*

Simulation 2

"Keep Transmission and Production Jobs Filled!"

1. Hire:	*Mara Murdoch*	*Donald McNulty*	*Carl Whitman*
2. Hire:	*Eldon Frank*		
3. Hire:	*Josh Potter*	*Vicky Brennan*	
4. Hire:	*Dallas Seeler*		
5. Hire:	*Lionel Washington*		
6. Hire:	*Mary Thompson*	*Arthur Martinez*	
7. Hire:	*Barry Levin*		
8. Hire:	*Delia Nunez*		
9. Hire:	*Phil Gordon*		
10. Hire:	*Jeanette D'Angelo*		

AGA American Gas Association